Listing of Claims

This listing of claims replaces all prior versions, and listings, of claims in the application:

1. (Currently Amended) A method of processing data packets comprising:

~~generating~~ receiving an enqueue command specifying a new buffer and a queue descriptor, the queue descriptor specifying one of a most recently used queue and a least recently used queue ~~associated with a new buffer in response to receiving an enqueue request~~, with the most recently used queue ~~descriptor~~ descriptors each being stored in a cache and ~~the queue descriptor having~~ comprising a head pointer pointing to a first buffer in a queue of buffers and a tail pointer pointing to a last buffer in the queue of buffers and with the first buffer having a buffer pointer pointing to a next buffer in the queue;

in response to the queue descriptor specifying a most recently used queue, setting a buffer pointer associated with the last buffer in the specified queue to point to the new buffer[[;]] and setting the tail pointer in the specified queue to point to the new buffer; and

in response to the queue descriptor specifying a least recently used queue, replacing a most recently used queue descriptor in the cache with the queue descriptor specifying the least recently used queue.

2. (Currently Amended) The method of claim 1 further comprising:

receiving a second enqueue command specifying a second new buffer; and

in response to a queue descriptor of the second enqueue command specifying the same specifiec queue, setting the tail pointer of the specifiec queue to point to ~~another~~ the second buffer ~~in response to receiving an enqueue request with respect to said other buffer~~.

3. (Currently Amended) The method of claim 1 further comprising:

~~generating~~ receiving a dequeue command specifying ~~the~~ a most recently used queue descriptor ~~associated with the first buffer in response to receiving a dequeue request with respect to the first buffer~~[[,]] ; and

setting the head pointer of the descriptor of the queue specified in the dequeue command to point to ~~the~~ a next buffer in the queue specified in the dequeue command.

4. (Currently Amended) The method of claim 3 further comprising:

receiving a second dequeue command specifying the same queue specified in the dequeue command; and

setting the head pointer of the descriptor of the specified queue to point to a buffer pointed to by the next buffer in the specified queue ~~response to receiving a dequeue request with respect to the next buffer~~.

5. (Canceled)

6. (Currently Amended) An apparatus for processing data packets comprising:

~~a first~~ at least one memory comprising:

a collection of ~~queue~~ queues of one or more buffers, each queue having a first buffer with a buffer pointer pointing to a next buffer in the queue, ~~and~~

a ~~cache~~ collection of most recently used queue descriptors, each of which ~~has~~ comprises a head pointer pointing to the first buffer in ~~the~~ a corresponding queue[[,]] and a tail pointer pointing to a last buffer in the corresponding queue, and

a collection of least recently used queue descriptors, each of which comprises a pointer pointing to a corresponding queue;

a processor coupled to the ~~first~~ at least one memory; and

a computer-readable medium storing instructions that, when applied to the processor, cause the processor to[[:]] generate an enqueue command to the at least one memory specifying a new buffer and one or more of a most recently used queue descriptor and a least recently used queue descriptor ~~associated with a new buffer~~,

wherein, in response to ~~receiving an~~ the enqueue ~~request~~ command specifying a most recently used queue descriptor ~~associated with the new buffer~~, ~~set~~ a buffer pointer associated with the last buffer of the specified queue is set to point to the new buffer, and ~~set~~ the tail pointer of the specified queue is set to point to the new buffer, and

in response to the enqueue command specifying a least recently used queue descriptor, a most recently used queue descriptor is replaced in the collection of most recently used queue descriptors with the specified least recently used queue descriptor.

7. (Currently Amended) The apparatus of claim 6 wherein ~~the processor is configured to:~~ , in response to a second enqueue command specifying a second new buffer and the most recently used queue descriptor, a current ~~set the~~ tail pointer is set to point to the ~~other~~ second new buffer~~, in response to receiving an enqueue request with respect to another buffer~~.

8. (Currently Amended) The apparatus of claim 6 wherein the processor is further configured to:

generate a dequeue command specifying a most recently used queue descriptor, ~~associated with the first buffer and set~~

wherein, in response to the dequeue command, the head pointer is set to point the next buffer after the first buffer of the queue specified by the most recently used queue descriptor ~~in response to receiving a dequeue request with respect to the first buffer~~.

9. (Currently Amended) The apparatus of claim 8 wherein ~~the processor is configured to:~~ , in response to a second dequeue command, ~~set~~ the head pointer is set to point to a buffer pointed to by the next buffer ~~in response to receiving a dequeue request with respect to the next buffer~~.

Claims 10-11. (Canceled)

12. (Currently Amended) The apparatus of claim 6 wherein each buffer in the ~~queue~~ queues specified by the most recently used queue descriptors includes pointers to data buffers having data packets residing in a second memory.

13. (Currently Amended) The apparatus of claim 6 wherein the ~~cache~~ collection of most recently used queue descriptors includes approximately 16 queue descriptors.

14. (Currently Amended) The apparatus of claim 6 wherein each ~~buffer in the queue~~ most recently used queue descriptor includes a count field having a value representing the number of buffers in the queue.

15. (Currently Amended) The apparatus of claim 6 wherein the ~~queue is~~ queues each comprise a linked list of buffers.

Claims 16.-20. (Canceled)

21. (Currently Amended) A system comprising:

a source of data packets to be grouped into data buffers;

a destination for the data ~~buffers~~ packets; and

an apparatus coupled to the source of the data packets and to the destination of the data ~~buffers~~ packets, the apparatus comprising:

~~a first~~ at least one memory comprising:

a collection of ~~queue~~ queues of one or more buffers, each queue having a first buffer with a buffer pointer pointing to a next buffer in the queue, ~~and~~

a ~~cache~~ collection of most recently used queue descriptors, each of which ~~has~~ comprises a head pointer pointing to the first buffer in ~~the~~ a corresponding queue and a tail pointer pointing to a last buffer in the corresponding queue, and

a collection of least recently used queue descriptors, each of which has a pointer pointing to a corresponding queue;

a processor coupled to the ~~first~~ at least one memory[[,]]; and

a computer-readable medium storing instructions that, when applied to the processor, cause the processor to[[:]] generate an enqueue command to the at least one memory specifying a new buffer and one or more of a least recently used queue descriptor and a most recently used queue descriptor ~~associated with a new buffer~~,

wherein, in response to the enqueue command specifying a most recently used queue descriptor, ~~set~~ a buffer pointer associated with the last buffer of the specified queue is set to point to the new buffer, and ~~set~~ the tail pointer of the specified queue is set to point to the new buffer, and

in response to the enqueue command specifying a least recently used queue descriptor, a most recently used queue descriptor is replaced in the collection of most recently used queue descriptors with the specified least recently used queue descriptor.

22. (Currently Amended) The system of claim 21 wherein ~~the processor is further configured to:~~ , in response to a second enqueue command specifying a second new buffer and the most recently used queue descriptor, ~~set the~~ a current tail pointer is set to point to ~~the other~~ the second new buffer~~, in response to receiving an enqueue request with respect to another buffer~~.

23. (Currently Amended) The system of claim 21 wherein the processor is further configured to:

generate a dequeue command specifying a most recently used queue descriptor, ~~associated with the first buffer and set~~

wherein, in response to the dequeue command, the head pointer is set to point to the next buffer after the first buffer of the queue specified by the most recently used queue descriptor ~~, in response to receiving a dequeue request with respect to the first buffer~~.

24. (Currently Amended) The system of claim 23 wherein ~~the processor configured to:~~ , in response to a second dequeue command, ~~set~~ the head pointer is set to point to a buffer pointed to by the ~~new~~ next buffer ~~, in response to receiving a dequeue request with respect to the new buffer~~.

Claims 25 - 26. (Canceled)

27. (Currently Amended) The system of claim 21 wherein each buffer in the ~~queue~~ queues specified by the most recently used queue descriptors includes pointers to data buffers containing data packets residing in a second memory.

28. (Currently Amended) The system of claim 21 wherein the ~~cache~~ collection of most recently used queue descriptors includes approximately 16 queue descriptors.

29. (Currently Amended) The system of claim 21 wherein each ~~buffer in the queue~~ most recently used queue descriptor includes a count field having a value representing the number of buffers in the queue.

30. (Currently Amended) The system of claim 21 wherein the ~~queue is~~ queues each comprise a linked list of buffers.

31. (New) The system of claim 21, wherein the processor comprises a cache to store a set of pointers to corresponding queue descriptors in the at least one memory.

32. (New) The apparatus of claim 6, wherein the processor comprises a cache to store a set of pointers to corresponding queue descriptors in the at least one memory.